

IN THE CLAIMS

1. (Currently Amended) A kneadable and moldable bone-replacement material which consists of a mixture of:

A) calcium-containing ceramic particles wherein the ceramic particles comprise a calcium-phosphate ratio having a molar Ca/P relationship between 1.0 and 2.0, wherein the calcium phosphate is selected from the following group: : Dicalcium-phosphate-dihydrate ($\text{CaHPO}_4 \times 2 \text{H}_2\text{O}$), dicalcium-phosphate (CaHPO_4), alpha-tricalcium-phosphate (alpha- $\text{Ca}_3(\text{PO}_4)_2$), beta-tricalcium-phosphate (beta- $\text{Ca}_3(\text{PO}_4)_2$), calcium-deficient hydro-xylapatite ($\text{Ca}_9(\text{PO}_4)_5(\text{HPO}_4)\text{OH}$), hydro-xylapatite ($\text{Ca}_{10}(\text{PO}_4)_6\text{OH}_2$), carbonated apatite ($\text{Ca}_{10}(\text{PO}_4)_3(\text{CO}_3)_3(\text{OH})_2$), fluoride-apatite ($\text{Ca}_{10}(\text{PO}_4)_6(\text{F},\text{OH})_2$), chloride-apatite ($\text{Ca}_{10}(\text{PO}_4)_6(\text{Cl},\text{OH})_2$), whitlockite ($(\text{Ca},\text{Mg})_3(\text{PO}_4)_2$), tetracalcium-phosphate ($\text{Ca}_4(\text{PO}_4)_2\text{O}$), oxyapatite ($\text{Ca}_{10}(\text{PO}_4)_6\text{O}$), beta-calcium-pyrophosphate (beta- $\text{Ca}_2(\text{P}_2\text{O}_7)$), alpha-calcium-pyrophosphate, gamma-calcium-pyrophosphate, octo-calcium-phosphate ($\text{Ca}_8\text{H}_2(\text{PO}_4)_6 \times 5 \text{H}_2\text{O}$), wherein at least 50% of the ceramic particles have a pore size between 100 and 500 micrometers, wherein a bulk density of the ceramic particles is between 0.6 g/ccm and 1.0 g/ccm, wherein the jarring density of the ceramic particles is between 0.7 g/ccm and 1.1 g/ccm and wherein an average diameter of the ceramic particles is between 100 and 250 micrometers.; and

B) a hydrogel or a substance that can be swelled into a hydrogel, and wherein:

C) the ceramic particles are of fully synthetic origin;

D) the individual ceramic particles have at least a partially cohesive, porous structure;
and

E) the majority of the ceramic particles have a non-spheric shape.

2. (Previously Presented) The bone-replacement material in accordance with claim 1, wherein the ceramic particles have an angular shape.

3. (Previously Presented) The bone-replacement material in accordance with claim 1, wherein the ceramic particles have a sphericity relationship $S = D_{\text{max}}/D_{\text{min}}$ a largest diameter D_{max} and a smallest diameter D_{min} which is larger than 1.2.

4. (Previously Presented) The bone-replacement material in accordance with claim 3, wherein the sphericity relationship S is larger than 3.

5. (Previously Presented) The bone-replacement material in accordance with claim 1, wherein at least 50% of the ceramic particles have a non-spheric shape.

6. (Previously Presented) The bone-replacement material in accordance with claim 1, wherein pore size of the ceramic particles is between 1 and 500 micrometers.

7.-8. (Canceled)

9. (Currently Amended) The bone-replacement material in accordance with claim [[8]] 1, wherein the pore size is between 340 and 450 micrometers.

10. (Previously Presented) The bone-replacement material in accordance with claim 1, wherein porosity of the ceramic particles is between 60 and 90 percent.

11.-16. (Canceled)

17. (Previously Presented) The bone-replacement material in accordance with claim 1, wherein a share of ceramic particles of non-spheric shape is at least 60%.

18.-20. (Canceled)

21. (Currently Amended) The bone-replacement material in accordance with claim [[18]] 1, wherein ceramic particles with an average diameter of 100 to 250 micrometers are used together with those having an average diameter of 250 to 500 micrometers and/or together with those having an average diameter of 0.5 to 5.6 mm.

22.-25 (Canceled)

26. (Previously Presented) The bone-replacement material in accordance with claim 1, wherein the ceramic particles consist of a mixture of different calcium-phosphates.

27. (Canceled)

28. (Previously Presented) The bone-replacement material in accordance with claim 1, wherein the ceramic particles consist of a calcium-carbonate.

29. (Previously Presented) The bone-replacement material in accordance with claim 1, wherein the ceramic particles are selected from the following group: alpha-calcium-sulfate-hemihydrate, beta-calcium-sulfate-hemihydrate, calcium-sulfate-dihydrate.

30. (Previously Presented) The bone-replacement material in accordance with claim 1, wherein the ceramic particles consist of a mixture of different calcium-phosphates, calcium-sulfates and/or calcium-carbonates.

31. (Previously Presented) The bone-replacement material in accordance with claim 1, further comprising metallic or semi-metallic ion shares as additives.

32. (Previously Presented) The bone-replacement material in accordance with claim 1, wherein the hydrogel or the substance which can be swelled into a hydrogel consists of fully synthetic substances.

33. (Previously Presented) The bone-replacement material in accordance with claim 1, wherein the hydrogel or the substance which can be swelled into a hydrogel consists of natural biological substances, preferably of plant origin.

34. (Previously Presented) The bone-replacement material in accordance with claim 1, wherein the hydrogel or the substance which can be swelled into a hydrogel consists of a biotechnologically generated substance.

35. (Previously Presented) The bone-replacement material in accordance with one claim 32, wherein the hydrogel or the substance which can be swelled into a hydrogel consists of a mixture of fully synthetic, natural biological or biotechnologically generated substances.

36. (Previously Presented) The bone-replacement material in accordance with claim 1, wherein the hydrogel or the substance which can be swelled into a hydrogel contains one of the following components: a) polyamino-acids or their derivatives, preferably polylysine or gelatin; b) polysaccharides and their derivatives, preferably glycosaminoglycane or alginate; c) polylipides, fatty acids and their derivatives; d) nucleotides and their derivatives; or a combination of the components as listed in a) through d).

37. (Previously Presented) The bone-replacement material in accordance with claim 1, wherein the hydrogel or the substance which can be swelled into a hydrogel contains one of the following components: a) polymethylenoxide or its derivatives; b) polyethylene, polyethylenoxide or their derivatives; c) polypropylene, polypropylenoxide or their derivatives; d) polyacrylate or its derivatives; or a combination of the components as listed in a) through d).

38. (Previously Presented) The bone-replacement material in accordance with claim 1, wherein the hydrogel or the substance which can be swelled into a hydrogel consists of either a glycosaminoglycane or a proteoglycane or a mixture of those two substances.

39. (Previously Presented) The bone-replacement material in accordance with claim 38, wherein the glycosaminoglycane is a hyaluron-acid, chondroitinsulfate, dermatansulfate, heparansulfate, heparine or keratansulfate.

40. (Previously Presented) The bone-replacement material in accordance with claim 1, wherein a concentration of the ready-to-use, hydrated hydrogel or a ready-to-use, hydrated substance which can be swollen into a hydrogel is between 0.1% and 20.0%.

41. (Previously Presented) The bone-replacement material in accordance with claim 1, wherein a molecular weight of the hydrogel or the substance which can be swelled into a hydrogel is larger than 300,000 Dalton and preferably larger than 500,000 Dalton.

42. (Previously Presented) The bone-replacement material in accordance with claim 41, wherein the molecular weight of the hydrogel or the substance which can be swelled into a hydrogel is larger than 1,000,000 Dalton and preferably larger than 1,500,000 Dalton.

43. (Previously Presented) The bone-replacement material in accordance with claim 1, wherein the hydrogel is a liquid solution of a hyaluronate.

44. (Previously Presented) The bone-replacement material in accordance with claim 43, wherein the liquid solution of the hydrogel contains less than 99% water.

45. (Previously Presented) The bone-replacement material in accordance with claim 43, wherein the liquid solution of the hydrogel contains less than 96.5% water.

46. (Previously Presented) The bone-replacement material in accordance with claim 43, wherein the molecular weight of the hyaluron-acid used is larger than 1.5×10^6 Dalton.

47. (Previously Presented) The bone-replacement material in accordance with claim 43, wherein the molecular weight of the hyaluron-acid used is between 0.5×10^6 and 1.0×10^6 Dalton.

48. (Previously Presented) The bone-replacement material in accordance with claim 43, wherein the molecular weight of the hyaluron-acid used is smaller than 1×10^6 and preferably smaller than 0.5×10^6 Dalton.

49. (Previously Presented) The bone-replacement material in accordance with claim 1, wherein a specific gravity of the calcium-containing, porous ceramic particles is between 0.5 and 1.0 g/ccm.

50. (Previously Presented) The bone-replacement material in accordance with claim 1, wherein a weight relationship A/B between the hydrated hydrogel and the calcium-containing ceramic particles is larger than 0.2.

51. (Previously Presented) The bone-replacement material in accordance with claim 50, wherein the weight relationship A/B is between 0.2 and 0.5.

52. (Previously Presented) The bone-replacement material in accordance with claim 50, wherein the weight relationship A/B is between 0.5 and 0.9.

53. (Previously Presented) The bone-replacement material in accordance with claim 50, wherein the weight relationship A/B is between 0.9 and 1.3.

54. (Previously Presented) The bone-replacement material in accordance with claim 50, wherein the weight relationship A/B is between 1.3 and 2.0.

55. (Previously Presented) The bone-replacement material in accordance with claim 50, wherein the weight relationship A/B is between 2 and 5.

56. (Previously Presented) The bone-replacement material in accordance with claim 50, wherein the weight relationship A/B is larger than 5.